In the Claims:

Cancel, without prejudice, claims 25 - 32, 56 - 106, amend claim 24, and add new claims 107 - 153 as indicated below:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

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18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Amended). A lightning detection system, comprising:

a plurality of sources of data representative of a ~~series of~~ pulse train resulting from a lightning ~~discharges~~ flash, said sources having different locations; and

a central analyzer for receiving and analyzing said data ~~representative of a series of lightning discharges, said central analyzer including a discharge correlation component for correlating sets of data representing series of discharges from respective said sources~~ so as to correlate a set of pulses in said pulse train across said sources using only a sub-set of the pulses of said set to produce an estimate of the location and the time of that portion of said lightning flash corresponding to said set of pulses.

25. (Cancelled)

26. (Cancelled)

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103. (Cancelled)

104. (Cancelled)

105. (Cancelled)

106. (Cancelled)

107. (New) The lightning detection system of claim 24, wherein said sub-set comprises just one of said pulses.

108. (New) The lightning detection system of claim 107, wherein said central analyzer is adapted to produce said estimate using only a portion of said data corresponding to the minimum number of said sources required for the production of said estimate.

109. (New) The lightning detection system of claim 108, wherein said one of said pulses is the largest amplitude pulse provided by each of said minimum number of sources.

110. (New) The lightning detection system of claim 108, wherein said minimum number of said sources is two when said first portion of said data includes an angle measurement representative of said pulse train provided by each of said two sources.

111. (New) The lightning detection system of claim 108, wherein said minimum number of said sources is three when said first portion of said data includes time-of-arrival measurements representative of said pulse train but does not include an angle measurement representative of said pulse train.

112. (New) The lightning detection system of claim 24, wherein said central analyzer is adapted to shift a portion of said data representative of at least one of said pulses, for each of said sources, in time by an amount determined from said estimate so as to align said portion of said data, determine from the aligned said portion of said data respective time intervals between corresponding pulses at each of said sources, and compare said time intervals across each of said sources to assess the reliability of said correlating.

113. (New) The lightning detection system of claim 112, wherein said central analyzer is adapted to identify said correlating as reliable if at least one of said time intervals compares to within a predetermined maximum error across each of said sources.

114. (New) The lightning detection system of claim 24, wherein said sub-set comprises more than one of said pulses.

115. (New) The lightning detection system of claim 114, wherein said central analyzer is adapted to produce said estimate using only a portion of said data corresponding to the minimum number of said sources required for the production of said estimate.

116. (New) The lightning detection system of claim 115, wherein said minimum number of said sources is two when said first portion of said data includes an angle measurement representative of said pulse train provided by each of said two sources.

117. (New) The lightning detection system of claim 115, wherein said minimum number of said sources is three when said first portion of said data includes time-of-arrival measurements representative of said pulse train but does not include an angle measurement representative of said pulse train.

118. (New) The lightning detection system of claim 117, wherein time-of-arrival differences between said subsets produced by pairs of said three sources are determined by cross-correlation.

119. (New) The lightning detection system of claim 24, wherein each of said sources is adapted for continually processing respective electrical detection signals at said sources representative of the electromagnetic field of said lightning flash so as to eliminate dead time between said pulses.

120. (New) The lightning detection system of claim 119, wherein each of said sources includes a data compression component for reducing the amount of said data, for decreasing the time or bandwidth required to transmit said data from said sources to said central analyzer over a communications channel.

121. (New) The lightning detection system of claim 120, wherein said data compression component is adapted to provide that the reduced said data includes representations of the amplitude and the time of occurrence of the largest amplitude pulse in said pulse train.

122. (New) The lightning detection system of claim 121, wherein said data compression component is adapted to provide that the reduced said data includes representations of the time of occurrence of one or more additional pulses in said pulse train relative to the time of occurrence of a pulse that is adjacent to said one or more additional pulses.

123. (New) The lightning detection system of claim 122, wherein said data compression component is adapted to provide that the reduced said data includes representations of the amplitudes of said one or more additional pulses relative to the amplitude of said largest amplitude pulse.

124. (New) The lightning detection system of claim 120, wherein each of said sources further includes a data decimation component for synchronously decimating said data.

125. (New) The lightning detection system of claim 124, wherein each of said sources is synchronized to a common time reference and, where the rate of production of said data exceeds the data transmission capacity of said communications channel, each of said sources transmits only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.

126. (New) The lightning detection system of claim 119, wherein each of said sources includes a data decimation component for synchronously decimating said data.

127. (New) The lightning detection system of claim 126, wherein each of said sources is adapted to transmit said data to said central analyzer over a communications channel, wherein each of said sources is synchronized to a common time reference and, where the rate of production of said data exceeds the data transmission capacity of said communications channel, each of said sources transmit only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.

128. (New) A lightning detection system, comprising a sensing system comprising a plurality of sensors at different locations for sensing one or more pulses of a lightning flash, each sensor being adapted to measure the time of the sensors' sensing said one or more pulses with reference to a common time reference to produce data representative of said one or more pulses, wherein each of said sensors is adapted for synchronously decimating the data corresponding thereto for decreasing the time or bandwidth required to transmit said data over a communications channel.

129. (New) The lightning detection system of claim 128, wherein, where the rate of production of said data exceeds the data transmission capacity of said communications channel, each of said sensors transmits only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.

130. (New) A method for lightning detection, comprising:

receiving data from a plurality of sources having different locations, said data being representative of a pulse train resulting from a lightning flash; and

analyzing said data so as to correlate a set of pulses in said pulse train across said sources using only a sub-set of the pulses of said set to produce

an estimate of the location and the time of that portion of said lightning flash corresponding to said set of pulses.

131. (New) The method of claim 130, wherein said sub-set comprises just one of said pulses.

132. (New) The method of claim 131, further comprising producing said estimate using only a first portion of said data corresponding to the minimum number of said sources required.

133. (New) The method of claim 132, wherein said one of said pulses is the largest amplitude pulse provided by each of said minimum number of sources.

134. (New) The method of claim 132, wherein said minimum number of said sources is two when said first portion of said data includes an angle measurement representative of said pulse train provided by each of said two sources.

135. (New) The method of claim 132, wherein said minimum number of said sources is three when said first portion of said data includes time-of-arrival measurements representative of said pulse train but does not include an angle measurement representative of said pulse train.

136. (New) The method of claim 130, further comprising shifting a portion of said data representative of at least one of said pulses, for each of said sources, in time by an amount determined from said estimate so as to align said portion of said data, determining from the aligned

said portion of said data respective time intervals between corresponding pulses at each of said sources, and comparing said time intervals across each of said sources to assess the reliability of said correlating.

137. (New) The method of claim lightning detection system of claim 136, further comprising identifying said correlating as reliable if, by said comparing, at least one of said time intervals compares to within a predetermined maximum error across each of said sources.

138. (New) The method of claim 130, wherein said sub-set comprises more than one of said pulses.

139. (New) The method of claim 138, further comprising producing said estimate using only a first portion of said data corresponding to the minimum number of said sources required.

140. (New) The method of claim 139, wherein said minimum number of said sources is two when said first portion of said data includes an angle measurement representative of said pulse train provided by each of said two sources.

141. (New) The method of claim 139, wherein said minimum number of said sources is three when said first portion of said data includes time-of-arrival measurements representative of said pulse train but does not include an angle measurement representative of said pulse train.

142. (New) Th method of claim 141, further comprising determining time-of-arrival differences between said subsets produced by pairs of said three sources by cross-correlation.

143. (New) The method of claim 130, further comprising continually processing respective electrical detection signals at said sources representative of the electromagnetic field of said lightning flash so as to eliminate dead time between said pulses.

144. (New) The method of claim 143, further comprising reducing the amount of said data, for decreasing the time or bandwidth required to transmit said data over a communications channel.

145. (New) The method of claim 144, further comprising providing that the reduced said data includes representations of the amplitude and the time of occurrence of the largest amplitude pulse in said pulse train.

146. (New) The method of claim 145, further comprising providing that the reduced said data includes representations of the time of occurrence of one or more additional pulses in said pulse train relative to the time of occurrence of a pulse that is adjacent to said one or more additional pulses.

147. (New) The method of claim 146, further comprising providing that the reduced said data includes representations of the amplitudes of said one or more additional pulses relative to the amplitude of said largest amplitude pulse.

148. (New) The method of claim 144, further comprising synchronously decimating said data.

149. (New) The method of claim 148, further comprising synchronizing each of said sources to a common time reference and, where the rate of production of said data exceeds the data transmission capacity of said communications channel, transmitting, by each of said sources, only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.

150. (New) The method of claim 143, further comprising synchronously decimating said data.

151. (New) The method of claim 150, wherein each of said sources is adapted to transmit said data to said central analyzer over a communications channel, further comprising synchronizing each of said sources to a common time reference and, where the rate of production of said data exceeds the data transmission capacity of said communications channel, transmitting, by each of said sources, only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.

152. (New) A method for lightning detection, comprising:

providing a plurality of sensors at different locations for sensing one or more pulses of a lightning flash, each sensor being adapted to measure the time of the

sensors' sensing said one or more pulses with reference to a common time reference to produce data representative of said one or more pulses; and

synchronously decimating, at each of said sensors, the data corresponding thereto for decreasing the time or bandwidth required to transmit said data over a communications channel.

153. (New) The method of claim 152, wherein, where the rate of production of said data exceeds the data transmission capacity of said communications channel, the method comprises transmitting, by each of said sensors, only so much of said data as is representative of a common, periodically recurring time frame of predetermined length.